

SCHEDULE 1
PROHIBITED GOODS
LIST OF DUAL-USE GOODS AS SET OUT IN ANNEX I TO THE DECISION

NOTES TO ANNEX I

TECHNOLOGY

The control of technology transfer in this Annex is limited to tangible forms.

NUCLEAR TECHNOLOGY NOTE (NTN)

(To be read in conjunction with section E of Category 0.)

The transfer of “technology” directly associated with any goods in Category 0, will be subject to as great a degree of scrutiny and control as will the goods.

“Technology” for the “development”, “production” or “use” of goods under control remains under control even when applicable to non-controlled goods.

The approval of goods for export also authorizes the export to the same end-user of the minimum “technology” required for the installation, operation, maintenance, and repair of the goods.

Controls on “technology” transfer do not apply to information “in the public domain” or to “basic scientific research”.

GENERAL TECHNOLOGY NOTE (GTN)

(To be read in conjunction with section E of Categories 1 to 9.)

The transfer of “technology” which is “required” for the “development”, “production” or “use” of goods controlled in Categories 1 to 9, is controlled according to the provisions of Categories 1 to 9.

“Technology” “required” for the “development”, “production” or “use” of goods under control remains under control even when applicable to non-controlled goods.

The approval of goods for export also authorizes the export to the same end-user of the minimum “technology” required for the installation, operation, maintenance, and repair of the goods.

N.B.: This does not release the repair “technology” specified in 8E002.a.

Controls on “technology” transfer do not apply to information “in the public domain” or to “basic scientific research”.

GENERAL SOFTWARE NOTE (GSN)

(This note overrides any control within section D of Categories 0 to 9)

Categories 0 to 9 of this list do not control software which is either:

- (a) Generally available to the public by being:
 - (1) Sold from stock at retail selling points, without restriction, by means of:
 - (a) Over-the-counter transactions;
 - (b) Mail order transactions;
 - (c) Telephone order transactions; and
 - (2) Designed for installation by the user without further substantial support by the supplier; or
- (b) “In the public domain”.

DEFINITIONS OF TERMS IN THIS ANNEX

Category references are given in brackets after the defined term.

1. “2–D Vector Rate” (4) means the number of vectors generated per second which have 10 pixel poly line vectors, clip tested, randomly oriented, with either integer or floating point X-Y coordinate values (whichever produces the maximum rate).

2. “3–D Vector Rate” (4) means the number of vectors generated per second which have 10 pixel poly line vectors, clip tested, randomly oriented, with either integer or floating point X-Y-Z coordinate values (whichever produces the maximum rate).

3. “Accuracy” (2), usually measured in terms of inaccuracy, means the maximum deviation, positive or negative, of an indicated value from an accepted standard or true value (usually measured in terms of inaccuracy).

4. “Active flight control systems” (7) are systems whose function to prevent undesirable “aircraft” and missile motions or structural loads by autonomously processing outputs from multiple sensors and then providing necessary preventive commands to effect automatic control.

5. “Active pixel” (6 8) is a minimum (single) element of the solid state array which has a photoelectric transfer function when exposed to light (electromagnetic) radiation.

6. “Adaptive control” (2) means a control system that adjusts the response from conditions detected during the operation (ref. ISO 2806-1980).

7. “Aircraft” (7 9) means a fixed wing, swivel wing, rotary wing (helicopter), tilt rotor or tilt-wing airborne vehicle.

N.B.: See also “civil aircraft”.

8. “Angular position deviation” (2) means the maximum difference between angular position and the actual, very accurately measured angular position after the workpiece mount of the table has been turned out of its initial position (ref. VDI/VDE 2617, Draft: ‘Rotary tables on coordinate measuring machines’).

9. “Asynchronous transfer mode” (ATM) (5) means a transfer mode in which the information is organised into cells; it is asynchronous in the sense that the recurrence of cells depends on the required or instantaneous bit rate (CCITT recommendation L.113).

10. “Automatic target tracking” (6) means a processing technique that automatically determines and provides as output an extrapolated value of the most probable position of the target in real time.

11. “Bandwidth of one voice channel” (5), in the case of data communication equipment, means designed to operate in one voice channel of 3,100 Hz, as defined in CCITT recommendation G.151.

12. “Basic gate propagation delay time” (3) means the propagation delay time value corresponding to the basic gate used within a “family” of “monolithic integrated circuits”. This may be specified, for a given “family”, either as the propagation delay time per typical gate or as the typical propagation delay time per gate.

N.B.: “Basic gate propagation delay time” is not to be confused with the input/output delay time of a complex “monolithic integrated circuit”.

13. “Basic scientific research” (GTN NTN) means experimental or theoretical work undertaken principally to acquire new knowledge of the fundamental principles of phenomena or observable facts, not primarily directed towards a specific practical aim or objective.

14. “Beat length” (6) means the distance over which two orthogonally polarised signals, initially in phase, must pass in order to achieve a 2 Piradian(s) phase difference.

15. “Bias” (accelerometer) (7) means an accelerometer output when no acceleration is applied.

186. “Boron equivalent” (BE) is defined as:

$BE = CF \times \text{Concentration of element Z in ppm}$

where

CF is the conversion factor $= \frac{\gamma_Z}{A_B \gamma_B} \times A_Z$

and γ_B and γ_Z are the thermal neutron capture cross sections (in barns) for boron and element Z respectively;

and A_B and A_Z are the atomic weights of boron and element Z respectively;

16. “Camming” (axial displacement) (2) means axial displacement in one revolution of the main spindle measured in a plane perpendicular to the spindle faceplate, at a point next to the circumference of the spindle faceplate (ref. ISO 230/1 1986, paragraph 5.63).

17. “CEP” (circle of equal probability) (7) is a measure of accuracy; the radius of the circle centred at the target, at a specific range, in which 50% of the payloads impact.

18. “Chemical Laser” (6) means a “laser” in which the excited species is produced by the output energy from a chemical reaction.

19. “Circulation-controlled anti-torque or circulation controlled direction control systems” (7) are systems that use air blown over aerodynamic surfaces to increase or control the forces generated by the surfaces.

20. “Civil aircraft” (7 9) means those “aircraft” listed by designation in published airworthiness certification lists by the civil aviation authorities to fly commercial civil internal and external routes or for legitimate civil, private or business use.

N.B.: See also “aircraft”.

189. “Civil aviation authorities” (7 9) means the competent authority in Austria, Australia, Belgium, Canada, Denmark, Ireland, Finland, France, Germany, Greece, Italy, Japan, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Turkey, United Kingdom or United States of America.

21. “Commingled” (1) means filament to filament blending of thermoplastic fibres and reinforcement fibres in order to produce a fibre reinforcement/ “matrix” mix in total fibre form.

22. “Comminution” (1) means a process to reduce a material to particles by crushing or grinding.

23. “Common channel signalling” (5) is a signalling method in which a single channel between exchanges conveys, by means of labelled messages, signalling information relating to a multiplicity of circuits or calls and other information such as that used for network management.

24. “Communications channel controller” (5) means the physical interface which controls the flow of synchronous or asynchronous digital information. It is an assembly that can be integrated into computer or telecommunications equipment to provide communications access.

25. “Composite” (1 6 8 9) means a “matrix” and an additional phase or additional phases consisting of particles, whiskers, fibres or any combination thereof, present for a specific purpose or purposes.

26. “Composite theoretical performance” (CTP) (4) is a measure of computational performance given in millions of theoretical operations per second (Mtops), calculated using the aggregation of “computing elements” (CE).

N.B.: See Category 4, Technical Note.

27. “Compound rotary table” (2) means a table allowing the workpiece to rotate and tilt about two non-parallel axes, which can be coordinated simultaneously for “contouring control”.

Status: This is the original version (as it was originally made). This item of legislation is currently only available in its original format.

28. “Computing element” (CE) (4) means the smallest computational unit that produces an arithmetic or logic result.

29. “Contouring control” (2) means two or more “numerically controlled” motions operating in accordance with instructions that specify the next required position and the required feed rates to that position. These feed rates are varied in relation to each other so that a desired contour is generated (ref. ISO/DIS 2806—1980).

30. “Critical temperature” (1 3 6) (sometimes referred to as the transition temperature) of a specific “superconductive” material means the temperature at which the material loses all resistance to the flow of direct electrical current.

31. “Cryptography” (5) means the discipline which embodies principles, means and methods for the transformation of data in order to hide its information content, prevent its undetected modification or prevent its unauthorized use. “Cryptography” is limited to the transformation of information using one or more secret parameters (e.g., crypto variables) or associated key management.

N.B.: “Secret parameter”: a constant or key kept from the knowledge of others or shared only within a group.

32. “Datagram” (4 5) means a self-contained, independent entity of data carrying sufficient information to be routed from the source to the destination data terminal equipment without reliance on earlier exchanges between this source or destination data terminal equipment and the transporting network.

33. “Data signalling rate” (5) means the rate, as defined in ITU Recommendation 53-36, taking into account that, for non-binary modulation, baud and bit per second are not equal. Bits for coding, checking and synchronisation functions are to be included.

N.B.: 1. When determining the “data signalling rate”, servicing and administrative channels shall be excluded.

N.B.: 2. It is the maximum one-way rate, i.e., the maximum rate in either transmission or reception.

34. “Deformable mirrors” (6) (also known as adaptive optic mirrors) means mirrors having:

(a) a single continuous optical reflecting surface which is dynamically deformed by the application of individual torques or forces to compensate for distortions in the optical waveform incident upon the mirror; or

(b) multiple optical reflecting elements that can be individually and dynamically repositioned by the application of torques or forces to compensate for distortions in the optical waveform incident upon the mirror.

35. “Depleted uranium” (0) means uranium depleted in the isotope 235 below that occurring in nature.

36. “Development” (GTN NTN All) is related to all phases prior to serial production, such as: design, design research, design analyses, design concepts, assembly and testing of prototypes, pilot production schemes, design data, process of transforming design data into a product, configuration design, integration design, layouts.

37. “Diffusion bonding” (1 2 9) means a solid state molecular joining of at least two separate metals into a single piece with a joint strength equivalent to that of the weakest material.

38. “Digital computer” (4 5) means equipment which can, in the form of one or more discrete variables:

(a) Accept data;

(b) Store data or instructions in fixed or alterable (writable) storage devices;

- (c) Process data by means of a stored sequence of instructions which is modifiable; and
- (d) Provide output of data.

N.B.: Modifications of a stored sequence of instructions include replacement of fixed storage devices, but not a physical change in wiring or interconnections.

39. “Digital transfer rate” (5) means the total bit rate of the information that is directly transferred on any type of medium.

N.B.: See also “total digital transfer rate”.

40. “Direct-acting hydraulic pressing” (2) means a deformation process which uses a fluid-filled flexible bladder in direct contact with the workpiece.

41. “Drift rate” (gyro) (7) means the time rate of output deviation from the desired output. It consists of random and systematic components and is expressed as an equivalent input angular displacement per unit time with respect to inertial space.

42. “Dynamic adaptive routing” (5) means automatic rerouting of traffic based on sensing and analysis of current actual network conditions.

N.B.: This does not include cases of routing decisions taken on predefined information.

43. “Dynamic signal analysers” (3) means “signal analysers” which use digital sampling and transformation techniques to form a Fourier spectrum display of the given waveform including amplitude and phase information.

N.B.: See also “signal analysers”.

44. “Effective gramme” (0) of “special fissile material” or “other fissile material” means:

- (a) For plutonium isotopes and uranium-233, the isotope weight in grammes;
- (b) For uranium enriched 1 per cent or greater in the isotope U-235, the element weight in grammes multiplied by the square of its enrichment expressed as a decimal weight fraction;
- (c) For uranium enriched below 1 per cent in the isotope U-235, the element weight in grammes multiplied by 0.0001;
- (d) For americium-242m, curium-245 and -247, californium-249 and -251, the isotope weight in grammes multiplied by 10;

45. “Electronic assembly” (3 4) means a number of electronic components (i.e., “circuit elements”, “discrete components”, integrated circuits, etc.) connected together to perform (a) specific function(s), replaceable as an entity and normally capable of being disassembled.

N.B.: 1. “Circuit element”: a single active or passive functional part of an electronic circuit, such as one diode, one transistor, one resistor, one capacitor, etc.

N.B.: 2. “Discrete component”: a separately packaged “circuit element” with its own external connections.

46. “Electronically steerable phased array antenna” (6) means an antenna which forms a beam by means of phase coupling, i.e., the beam direction is controlled by the complex excitation coefficients of the radiating elements and the direction of that beam can be varied in azimuth or in elevation, or both, by application, both in transmission and reception, of an electrical signal.

47. “End-effectors” (2) include grippers, “active tooling units” and any other tooling that is attached to the baseplate on the end of a “robot” manipulator arm.

N.B.: “Active tooling unit”: a device for applying motive power, process energy or sensing to the workpiece.

48. “Equivalent Density” (6) means the mass of an optic per unit optical area projected onto the optical surface.

Status: This is the original version (as it was originally made). This item of legislation is currently only available in its original format.

49. “Expert systems” (4) mean systems providing results by application of rules to data which are stored independently of the “programme” and capable of any of the following:

- (a) Modifying automatically the “source code” introduced by the user;
- (b) Providing knowledge linked to a class of problems in quasi-natural language; or
- (c) Acquiring the knowledge required for their development (symbolic training).

50. “Family” (3) means a group of microprocessor or microcomputer microcircuits with:

- (a) The same architecture;
- (b) The same basic instruction set; and
- (c) The same basic technology (e.g., only NMOS or only CMOS).

51. “Fast select” (4 5) means a facility applicable to virtual calls which allows a data terminal equipment to expand the possibility to transmit data in call set-up and clearing packets beyond the basic capabilities of a virtual call.

N.B.: “Packet”: a group of binary digits including data and call control signals which is switched as a composite whole. The data, call control signals and possibly error control information are arranged in a specified format.

52. “Fault tolerance” (4) is the capability of a computer system, after any malfunction of any of its hardware or “software” components, to continue to operate without human intervention, at a given level of service that provides: continuity of operation, data integrity and recovery of service within a given time.

53. “Fibrous or filamentary materials” (0 2 8) include:

- (a) Continuous monofilaments;
- (b) Continuous yarns and rovings;
- (c) Tapes, fabrics, random mats and braids;
- (d) Chopped fibres, staple fibres and coherent fibre blankets;
- (e) Whiskers, either monocrystalline or polycrystalline, of any length;
- (f) Aromatic polyamide pulp.

54. “Film type integrated circuit” (3) means an array of “circuit elements” and metallic interconnections formed by deposition of a thick or thin film on an insulating “substrate”.

N.B.: “Circuit element”: a single active or passive functional part of an electronic circuit, such as one diode, one transistor, one resistor, one capacitor, etc.

55. “Fixed” (5) means that the coding or compression algorithm cannot accept externally supplied parameters (e.g., cryptographic or key variables) and cannot be modified by the user.

56. “Flexible manufacturing unit” (FMU) (2) (sometimes also referred to as “flexible manufacturing system” (FMS) or “flexible manufacturing cell” (FMC)) means an entity which includes a combination of at least:

- (a) A “digital computer” including its own “main storage” and its own related equipment; and
- (b) Two or more of the following:
 - (1) A machine tool specified in 2B001.c.;
 - (2) A dimensional inspection machine specified in Category 2., or another digitally controlled measuring machine specified in Category 2.;
 - (3) A “robot” specified in Categories 2. or 8.;
 - (4) .Digitally controlled equipment specified in 1B003, 2B003 or 9B001;

- (5) “Stored programme controlled” equipment specified in 3B001.a.;
- (6) Digitally controlled equipment specified in 1B001;
- (7) Digitally controlled electronic equipment specified in 3A002.c.

57. “Fluoride fibres” (6) means fibres manufactured from bulk fluoride compounds.

190. “Focal plane array” (6) means a linear or two-dimensional planar layer, or combination of planar layers, of individual detector elements, with or without readout electronics, which work in the focal plane.

N.B.: This is not intended to include a stack of single detector elements or any two, three or four element detectors provided time delay and integration is not performed within the element.

58. “Frequency agility” (frequency hopping) (5) means a form of “spread spectrum” in which the transmission frequency of a single communication channel is made to change by discrete steps.

59. “Frequency switching time” (3 5) means the maximum time (i.e., delay), taken by a signal, when switched from one selected output frequency to another selected output frequency, to reach:

- (a) A frequency within 100 Hz of the final frequency; or
- (b) An output level within 1 dB of the final output level.

60. “Frequency synthesiser” (3) means any kind of frequency source or signal generator, regardless of the actual technique used, providing a multiplicity of simultaneous or alternative output frequencies, from one or more outputs, controlled by, derived from or disciplined by a lesser number of standard (or master) frequencies.

61. “Gas Atomisation” (1) means a process to reduce a molten stream of metal alloy to droplets of 500 micrometre diameter or less by a high pressure gas stream.

62. “Gateway” (5) means the function, realised by any combination of equipment and “software”, to carry out the conversion of conventions for representing, processing or communicating information used in one system into the corresponding but different conventions used in another system.

63. “Generic software” (5) means a set of instructions for a “stored programme controlled” switching system that is the same for all switches using that type of switching system.

N.B.: The data base portion is not considered to be part of the “generic software”.

64. “Geographically dispersed” (6) is where each location is distant from any other more than 1,500 m in any direction. Mobile sensors are always considered “geographically dispersed”.

65. “Global interrupt latency time” (4) means the time taken by the computer system to recognize an interrupt due to the event, service the interrupt and perform a context switch to an alternate memory-resident task waiting on the interrupt.

66. “Guidance set” (7) means systems that integrate the process of measuring and computing a vehicles position and velocity (ie. navigation) with that of computing and sending commands to the vehicles flight control systems to correct the trajectory.

67. “Hot isostatic densification” (2) means the process of pressurising a casting at temperatures exceeding 375 K (102°C) in a closed cavity through various media (gas, liquid, solid particles, etc.) to create equal force in all directions to reduce or eliminate internal voids in the casting.

68. “Hybrid computer” (4) means equipment which can:

- (a) Accept data;
- (b) Process data, in both analogue and digital representations; and
- (c) Provide output of data.

Status: This is the original version (as it was originally made). This item of legislation is currently only available in its original format.

69. “Hybrid integrated circuit” (3) means any combination of integrated circuit(s), or integrated circuit with “circuit elements” or “discrete components” connected together to perform (a) specific function(s), and having all of the following characteristics:

- Containing at least one unencapsulated device;
- Connected together using typical IC production methods;
- Replaceable as an entity; and
- Not normally capable of being disassembled.

N.B.: 1. “Circuit element”: a single active or passive functional part of an electronic circuit, such as one diode, one transistor, one resistor, one capacitor, etc.

2. “Discrete component”: a separately packaged “circuit element” with its own external connections.

70. “Image enhancement” (4) means the processing of externally derived information-bearing images by algorithms such as time compression, filtering, extraction, selection, correlation, convolution or transformations between domains (e.g., fast Fourier transform or Walsh transform). This does not include algorithms using only linear or rotational transformation of a single image, such as translation, feature extraction, registration or false coloration.

71. “In the public domain” (GTN NTN GSN), as it applies herein, means “technology” or “software” which has been made available without restrictions upon its further dissemination (copyright restrictions do not remove “technology” or “software” from being “in the public domain”).

72. “Information security” (5) is all the means and functions ensuring the accessibility, confidentiality or integrity of information or communications, excluding the means and functions intended to safeguard against malfunctions. This includes “cryptography”, “cryptanalysis”, protection against compromising emanations and computer security.

N.B.: “Crypanalysis”: the analysis of a cryptographic system or its inputs and outputs to derive confidential variables or sensitive data, including clear text.

73. “Instantaneous bandwidth” (3 5) means the bandwidth over which output power remains constant within 3dB without adjustment of other operating parameters.

74. “Instrumented range” (6) means the specified unambiguous display range of a radar.

75. “Insulation” (9) is applied to the components of a rocket motor, ie. the case, nozzle, inlets, case closures, and includes cured or semi-cured compounded rubber sheet stock containing an insulating or refractory material. It may also be incorporated as stress relief boots or flaps.

76. “Integrated Services Digital Network” (ISDN) (5) means a unified end-to-end digital network, in which data originating from all types of communication (e.g., voice, text, data, still and moving pictures) are transmitted from one port (terminal) in the exchange (switch) over one access line to and from the subscriber.

77. “Interconnected radar sensors” (6) means two or more radar sensors are interconnected when they mutually exchange data in real time.

78. “Interior lining” (9) is suited for the bond interface between the solid propellant and the case or insulating liner. Usually a liquid polymer based dispersion of refractory or insulating materials, eg carbon filled HTPB or other polymer with added curing agents sprayed or screeded over a case interior.

79. “Intrinsic Magnetic Gradiometer” (6) is a single magnetic field gradient sensing element and associated electronics the output of which is a measure of magnetic field gradient.

N.B.: See also “magnetic gradiometer”.

191. “Isolated live cultures” includes live cultures in dormant form and in dried preparations.

80. “Isostatic presses” (2) mean equipment capable of pressurising a closed cavity through various media (gas, liquid, solid particles, etc.) to create equal pressure in all directions within the cavity upon a workpiece or material.

81. “Laser” (0 2 3 5 6 9) is an assembly of components which produce both spatially and temporally coherent light that is amplified by stimulated emission of radiation.

N.B.: See also:

“Chemical laser”;

“Q-switched laser”;

“Super High Power”;

“Transfer laser”.

82. “Linearity” (2) (usually measured in terms of non-linearity) means the maximum deviation of the actual characteristic (average of upscale and downscale readings), positive or negative, from a straight line so positioned as to equalise and minimise the maximum deviations.

83. “Local area network” (4) is a data communication system which:

(a) Allows an arbitrary number of independent “data devices” to communicate directly with each other; and

(b) Is confined to a geographical area of moderate size (e.g., office building, plant, campus, warehouse).

N.B.: “Data device”: equipment capable of transmitting or receiving sequences of digital information.

84. “Magnetic Gradiometers” (6) are instruments designed to detect the spatial variation of magnetic fields from sources external to the instrument. They consist of multiple “magnetometers” and associated electronics the output of which is a measure of magnetic field gradient.

N.B.: See also “intrinsic magnetic gradiometer”.

85. “Magnetometers” (6) are instruments designed to detect magnetic fields from sources external to the instrument. They consist of a single magnetic field sensing element and associated electronics the output of which is a measure of the magnetic field.

86. “Main storage” (4) means the primary storage for data or instructions for rapid access by a central processing unit. It consists of the internal storage of a “digital computer” and any hierarchical extension thereto, such as cache storage or non-sequentially accessed extended storage.

87. “Matrix” (1 6 8 9) means a substantially continuous phase that fills the space between particles, whiskers or fibres.

88. “Maximum bit transfer rate” (“MBTR”) of:

(a) solid state storage equipment means the number of data bits per second transferred between the equipment and its controller;

(b) a disk drive means the internal data transfer rate calculated as

$B \times R \times T$ (bits per second)

where:

B = maximum number of data bits per track available to read or write in a single revolution;

R = revolutions per second;

T = number of tracks which can be read or written simultaneously.

192. “MBTR”—see Maximum Bit transfer Rate.

Status: This is the original version (as it was originally made). This item of legislation is currently only available in its original format.

89. “Measurement uncertainty” (2) is the characteristic parameter which specifies in what range around the output value the correct value of the measurable variable lies with a confidence level of 95 %. It includes the uncorrected systematic deviations, the uncorrected backlash and the random deviations (ref. VDI/VDE 2617).

90. “Mechanical Alloying” (1) means an alloying process resulting from the bonding, fracturing and rebonding of elemental and master alloy powders by mechanical impact. Non-metallic particles may be incorporated in the alloy by addition of the appropriate powders.

91. “Media access unit” (5) means equipment which contains one or more communication interfaces (“network access controller”, “communications channel controller”, modem or computer bus) to connect terminal equipment to a network.

92. “Melt Extraction” (1) means a process to “solidify rapidly” and extract a ribbon-like alloy product by the insertion of a short segment of a rotating chilled block into a bath of a molten metal alloy.

N.B.: “Solidify rapidly”: solidification of molten material at cooling rates exceeding 1,000 K/sec.

93. “Melt Spinning” (1) means a process to “solidify rapidly” a molten metal stream impinging upon a rotating chilled block, forming a flake, ribbon or rod-like product.

N.B.: “Solidify rapidly”: solidification of molten material at cooling rates exceeding 1,000 K/sec.

94. “Microcomputer microcircuit” (3) means a “monolithic integrated circuit” or “multichip integrated circuit” containing an arithmetic logic unit (ALU) capable of executing general purpose instructions from an internal storage, on data contained in the internal storage.

N.B.: The internal storage may be augmented by an external storage.

95. “Microprocessor microcircuit” (3) means a “monolithic integrated circuit” or “multichip integrated circuit” containing an arithmetic logic unit (ALU) capable of executing a series of general purpose instructions from an external storage.

N.B.: 1. The “microprocessor microcircuit” normally does not contain integral user-accessible storage, although storage present on-the-chip may be used in performing its logic function.

2. This includes chip sets which are designed to operate together to provide the function of a “microprocessor microcircuit”.

187. “Microorganisms” (1 2) means bacteria, viruses, mycoplasmas, rickettsiae, chlamydiae or fungi, whether natural, enhanced or modified, either in the form of isolated live cultures or as material including living material which has been deliberately inoculated or contaminated with such cultures.

96. “Microprogramme” means a sequence of elementary instructions, maintained in a special storage, the execution of which is initiated by the introduction of its reference instruction into an instruction register.

97. “Missiles” (1-7,9) means complete rocket systems and unmanned air vehicle systems, capable of delivering at least 500 kg payload to a range of at least 300 km.

98. “Monolithic integrated circuit” (3) means a combination of passive or active “circuit elements” or both which:

(a) Are formed by means of diffusion processes, implantation processes or deposition processes in or on a single semiconducting piece of material, a so-called ‘chip’;

(b) Can be considered as indivisibly associated; and

(c) Perform the function(s) of a circuit.

N.B.: “Circuit element”: a single active or passive functional part of an electronic circuit, such as one diode, one transistor, one resistor, one capacitor, etc.

99. “Motion control board” (2) means an “electronic assembly” specially designed to provide a computer system with the capability to coordinate simultaneously the motion of axes of machine tools for “contouring control”.

100. “Multichip integrated circuit” (3) means two or more “monolithic integrated circuits” bonded to a common “substrate”.

101. “Multi-data-stream processing” (4) means the “microprogramme” or equipment architecture technique which permits simultaneous processing of two or more data sequences under the control of one or more instruction sequences by means such as:

- (a) Single Instruction Multiple Data (SIMD) architectures such as vector or array processors;
- (b) Multiple Single Instruction Multiple Data (MSIMD) architectures;
- (c) Multiple Instruction Multiple Data (MIMD) architectures, including those which are tightly coupled, closely coupled or loosely coupled; or
- (d) Structured arrays of processing elements, including systolic arrays.

102. “Multilevel security” (5) means a class of system containing information with different sensitivities that simultaneously permits access by users with different security clearances and needs-to-know, but prevents users from obtaining access to information for which they lack authorization.

N.B.: “Multilevel security” is computer security and not computer reliability which deals with equipment fault prevention or human error prevention in general.

103. “Multispectral imaging sensors” (6) are capable of simultaneous or serial acquisition of imaging data from two or more discrete spectral bands. Sensors having more than twenty discrete spectral bands are sometimes referred to as hyperspectral imaging sensors.

104. “Natural uranium” (0) means uranium containing the mixtures of isotopes occurring in nature.

105. “Network access controller” (4 5) means a physical interface to a distributed switching network. It uses a common medium which operates throughout at the same “digital transfer rate” using arbitration (e.g., token or carrier sense) for transmission. Independently from any other, it selects data packets or data groups (e.g., IEEE 802) addressed to it. It is an assembly that can be integrated into computer or telecommunications equipment to provide communications access.

106. “Neural computer” (4) means a computational device designed or modified to mimic the behaviour of a neuron or a collection of neurons, i.e., a computational device which is distinguished by its hardware capability to modulate the weights and numbers of the interconnections of a multiplicity of computational components based on previous data.

107. “Noise level” (6) means an electrical signal given in terms of power spectral density. The relation between “noise level” expressed in peak-to-peak is given by $S_{pp}^2 = 8N_o(f_2-f_1)$, where S_{pp} is the peak-to-peak value of the signal (e.g., nanoteslas), N_o is the power spectral density (e.g., (nanotesla)²/Hz) and (f_2-f_1) defines the bandwidth of interest.

108. “Nuclear reactor” (0) means the items within or attached directly to the reactor vessel, the equipment which controls the level of power in the core, and the components which normally contain, come into direct contact with or control the primary coolant of the reactor core.

109. “Numerical control” (2) means the automatic control of a process performed by a device that makes use of numeric data usually introduced as the operation is in progress (ref. ISO 2382).

Status: This is the original version (as it was originally made). This item of legislation is currently only available in its original format.

110. “Operate autonomously” (8) means operating fully submerged, without snorkel, all systems working and cruising at minimum speed at which the submersible can safely control its depth dynamically by using its depth planes only, with no need for a support vessel or support base on the surface, sea-bed or shore, and containing a propulsion system for submerged or surface use.

111. “Optical amplification” (5), in optical communications, means an amplification technique that introduces a gain of optical signals that have been generated by a separate optical source, without conversion to electrical signals, i.e., using semiconductor optical amplifiers, optical fibre luminescent amplifiers.

112. “Optical computer” (4) means a computer designed or modified to use light to represent data and whose computational logic elements are based on directly coupled optical devices.

113. “Optical fibre preforms” (5 6) means bars, ingots, or rods of glass, plastic or other materials which have been specially processed for use in fabricating optical fibres. The characteristics of the preform determine the basic parameters of the resultant drawn optical fibres.

114. “Optical integrated circuit” (3) means a “monolithic integrated circuit” or a “hybrid integrated circuit”, containing one or more parts designed to function as a photosensor or photoemitter or to perform (an) optical or (an) electro-optical function(s).

115. “Optical switching” (5) means the routing of or switching of signals in optical form without conversion to electrical signals.

116. “Other fissile materials” (0) mean “previously separated” americium-242m, curium-245 and -247, californium-249 and -251, isotopes of plutonium other than plutonium-238 and -239, and any material containing the foregoing.

117. “Overall current density” (3) means the total number of ampere-turns in the coil (i.e., the sum of the number of turns multiplied by the maximum current carried by each turn) divided by the total cross-section of the coil (comprising the superconducting filaments, the metallic matrix in which the superconducting filaments are embedded, the encapsulating material, any cooling channels, etc.).

118. “Part programme” (2) means an ordered set of instructions in a language and in a format required to cause operations to be effected under automatic control, which is either written in the form of a machine program on an input medium or prepared as input data for processing in a computer to obtain a machine program (ref. ISO 2806-1980).

119. “Peak power” (6), means energy per pulse in joules divided by the pulse duration in seconds.

120. “Personalized smart card” (5) means a smart card containing a microcircuit, in accordance with ISO/IEC 781, which has been programmed by the issuer and cannot be changed by the user.

121. “Power management” (7) means changing the transmitted power of the altimeter signal so that received power at the “aircraft” altitude is always at the minimum necessary to determine the altitude.

122. “Previously separated” (0) means the application of any process intended to increase the concentration of the controlled isotope.

123. “Principal element” (4), as it applies in Category 4, is a “principal element” when its replacement value is more than 35% of the total value of the system of which it is an element. Element value is the price paid for the element by the manufacturer of the system, or by the system integrator. Total value is the normal international selling price to unrelated parties at the point of manufacture or consolidation of shipment.

124. “Private automatic branch exchange” (PABX) (5) means an automatic telephone exchange, typically incorporating a position for an attendant, designed to provide access to the public network and serving extensions in an institution such as a business, government, public service or similar organisation.

125. “Production” (GTN NTN All) means all production phases, such as: construction, production engineering, manufacture, integration, assembly (mounting), inspection, testing, quality assurance.

126. “Production equipment” (9) means tooling, templates, jigs, mandrels, moulds, dies, fixtures, alignment mechanisms, test equipment, other machinery and components therefor, limited to those specially designed or modified for “development” or for one or more phases of “production”.

127. “Production facilities” (9) means equipment and specially designed software therefor integrated into installations for “development” or for one or more phases of “production”.

128. “Programme” (2 4 5) means a sequence of instructions to carry out a process in, or convertible into, a form executable by an electronic computer.

129. “Pulse compression” (6) means the coding and processing of a radar signal pulse of long time duration to one of short time duration, while maintaining the benefits of high pulse energy.

130. “Pulse duration” (6) is the duration of a “laser” pulse measured at Full Width Half Intensity (FWHI) levels.

131. “Q-switched laser” (6) means a “laser” in which the energy is stored in the population inversion or in the optical resonator and subsequently emitted in a pulse.

132. “Radar frequency agility” (6) means any technique which changes, in a pseudo-random sequence, the carrier frequency of a pulsed radar transmitter between pulses or between groups of pulses by an amount equal to or larger than the pulse bandwidth.

133. “Radar spread spectrum” (6) means any modulation technique for spreading energy originating from a signal with a relatively narrow frequency band, over a much wider band of frequencies, by using random or pseudo-random coding.

134. “Range” (8) means half the maximum distance a submersible vehicle can cover.

135. “Real time bandwidth” (3) for “dynamic signal analysers” is the widest frequency range which the analyser can output to display or mass storage without causing any discontinuity in the analysis of the input data. For analysers with more than one channel, the channel configuration yielding the widest “real-time bandwidth” shall be used to make the calculation.

136. “Real time processing” (2 4) means processing of data by an electronic computer in response to an external event according to time requirements imposed by the external event.

137. “Required” (GTN 1-9), as applied to “technology” or “software”, refers to only that portion of “technology” or “software” which is peculiarly responsible for achieving or extending the controlled performance levels, characteristics or functions. Such “required” “technology” or “software” may be shared by different goods.

138. “Resolution” (2) means the least increment of a measuring device; on digital instruments, the least significant bit (ref. ANSI B-89.1.12).

139. “Robot” (2 8) means a manipulation mechanism, which may be of the continuous path or of the point-to-point variety, may use sensors, and has all the following characteristics:

- a. Is multifunctional;
- b. Is capable of positioning or orienting material, parts, tools or special devices through variable movements in three dimensional space;
- c. Incorporates three or more closed or open loop servo-devices which may include stepping motors; and

Status: This is the original version (as it was originally made). This item of legislation is currently only available in its original format.

- d. Has “user-accessible programmability” by means of teach/playback method or by means of an electronic computer which may be a programmable logic controller, i.e., without mechanical intervention.

N.B.: The above definition does not include the following devices:

1. Manipulation mechanisms which are only manually/ teleoperator controllable;
2. Fixed sequence manipulation mechanisms which are automated moving devices, operating according to mechanically fixed programmed motions. The programme is mechanically limited by fixed stops, such as pins or cams. The sequence of motions and the selection of paths or angles are not variable or changeable by mechanical, electronic or electrical means;
3. Mechanically controlled variable sequence manipulation mechanisms which are automated moving devices, operating according to mechanically fixed programmed motions. The programme is mechanically limited by fixed, but adjustable stops, such as pins or cams. The sequence of motions and the selection of paths or angles are variable within the fixed programme pattern. Variations or modifications of the programme pattern (e.g., changes of pins or exchanges of cams) in one or more motion axes are accomplished only through mechanical operations;
4. Non-servo-controlled variable sequence manipulation mechanisms which are automated moving devices, operating according to mechanically fixed programmed motions. The programme is variable but the sequence proceeds only by the binary signal from mechanically fixed electrical binary devices or adjustable stops;
5. Stacker cranes defined as Cartesian coordinate manipulator systems manufactured as an integral part of a vertical array of storage bins and designed to access the contents of those bins for storage or retrieval.

140. “Rotary Atomisation” (1) means a process to reduce a stream or pool of molten metal to droplets to a diameter of 500 micrometre or less by centrifugal force.

141. “Run out” (out-of-true running) (2) means radial displacement in one revolution of the main spindle measured in a plane perpendicular to the spindle axis at a point on the external or internal revolving surface to be tested (ref. ISO 230/1-1986, paragraph 5.61).

142. “Scale factor” (gyro or accelerometer) (7) means the ratio of change in output to a change in the input intended to be measured. Scale factor is generally evaluated as the slope of the straight line that can be fitted by the method of least squares to input-output data obtained by varying the input cyclically over the input range.

143. “Settling time” (3) means the time required for the output to come within one-half bit of the final value when switching between any two levels of the converter.

144. “Signal analysers” (3) means apparatus capable of measuring and displaying basic properties of the single-frequency components of multi-frequency signals.

145. “Signal processing” (4 5) means the processing of externally derived information-bearing signals by algorithms such as time compression, filtering, extraction, selection, correlation, convolution or transformations between domains (e.g., fast Fourier transform or Walsh transform).

146. “Simple educational devices” (3) means devices designed for use in teaching basic scientific principles and demonstrating the operation of those principles in educational institutions.

147. “Software” (GSN All) means a collection of one or more “programmes” or “microprogrammes” fixed in any tangible medium of expression.

148. “Source code” (or source language) (4 5) is a convenient expression of one or more processes which may be turned by a programming system into equipment executable form (“object code” (or object language)).

149. “Spacecraft” (7 9) means active and passive satellites and space probes.

150. “Space qualified” (3 6) refers to products designed, manufactured and tested to meet the special electrical, mechanical or environmental requirements for use in the launch and deployment of satellites or high altitude flight systems operating at altitudes of 100 km or higher.

151. “Special fissile material” (0) means plutonium-239, “uranium enriched in the isotopes 235 or 233”, and any material containing the foregoing.

152. “Specific modulus” (0 1) is Young’s modulus in pascals, equivalent to N/m^2 divided by specific weight in N/m^3 , measured at a temperature of $(296 \pm 2) K$ ($(23 \pm 2)^\circ C$) and a relative humidity of $(50 \pm 5)\%$.

153. “Specific tensile strength” (0 1) is ultimate tensile strength in pascals, equivalent to N/m^2 divided by specific weight in N/m^3 , measured at a temperature of $(296 \pm 2) K$ ($(23 \pm 2)^\circ C$) and a relative humidity of $(50 \pm 5)\%$.

154. “Spectral efficiency” (5) is a figure of merit parametrized to characterize the efficiency of transmission system which uses complex modulation schemes such as QAM (quadrature amplitude modulation), Trellis coding, QPSK (Q-phased shift key), etc. It is defined as follows:

Spectralefficiency=Digital transfer rate(bits/second)/6dB spectrum bandwidth (Hz)

155. “Splat Quenching” (1) means a process to “solidify rapidly” a molten metal stream impinging upon a chilled block, forming a flake-like product.

N.B.: “Solidify rapidly”: solidification of molten material at cooling rates exceeding 1,000 K/sec.

156. “Spread spectrum” (5) means the technique whereby energy in a relatively narrow-band communication channel is spread over a much wider energy spectrum.

157. “Sputtering” (4) means an overlay coating process wherein positively charged ions are accelerated by an electric field towards the surface of a target (coating material). The kinetic energy of the impacting ions is sufficient to cause target surface atoms to be released and deposited on the substrate.

N.B.: Triode, magnetron or radio frequency sputtering to increase adhesion of coating and rate of deposition are ordinary modifications of the process.

158. “Stability” (7) means the standard deviation (1 sigma) of the variation of a particular parameter from its calibrated value measured under stable temperature conditions. This can be expressed as a function of time.

159. “Stored programme controlled” (2 3 5) means controlled by using instructions stored in an electronic storage which a processor can execute in order to direct the performance of predetermined functions.

N.B.: Equipment may be “stored programme controlled” whether the electronic storage is internal or external to the equipment.

160. “Substrate” (3) means a sheet of base material with or without an interconnection pattern and on which or within which “discrete components” or integrated circuits or both can be located.

N.B.: “Discrete component”: a separately packaged “circuit element” with its own external connections.

Status: This is the original version (as it was originally made). This item of legislation is currently only available in its original format.

161. “Substrate blanks” (6) means monolithic compounds with dimensions suitable for the production of optical elements such as mirrors or optical windows.

162. “Superalloys” (2 9) means Nickel-, cobalt- or iron-base alloys having strengths superior to any alloys in the AISI 300 series at temperatures over 922 K (649°C) under severe environmental and operating conditions.

163. “Superconductive” (1 3 6 8) means materials, i.e., metals, alloys or compounds, which can lose all electrical resistance, i.e., which can attain infinite electrical conductivity and carry very large electrical currents without Joule heating.

N.B.: The “superconductive” state of a material is individually characterised by a “critical temperature”, a critical magnetic field, which is a function of temperature, and a critical current density which is, however, a function of both magnetic field and temperature.

164. “Super High Power Laser” (SHPL) (6) means a “laser” capable of delivering (the total or any portion of) the output energy exceeding 1 kJ within 50 ms or having an average or CW power exceeding 20 kW.

165. “Superplastic forming” (1 2) means a deformation process using heat for metals that are normally characterised by low values of elongation (less than 20%) at the breaking point as determined at room temperature by conventional tensile strength testing, in order to achieve elongations during processing which are at least 2 times those values.

166. “Swept frequency network analysers” (3) means analysers which involve the automatic measurement of equivalent circuit parameters over a range of frequencies, involving swept frequency measurement techniques but not continuous wave point-to-point measurements.

167. “Switch fabric” (5) is that hardware and associated “software” which provides the physical or virtual connection path for in-transit message traffic being switched.

168. “Synchronous digital hierarchy” (SDH) (5) means a digital hierarchy providing a means to manage, multiplex and access various forms of digital traffic using a synchronous transmission format on different types of media. The format is based on the Synchronous Transport Module (STM) which is defined by CCITT Recommendation G.703, G.707, G.708, G.709 and others yet to be published. The first level rate of “SDH” is 155.52 Mbit/s.

169. “Synchronous optical network” (SONET) (5) means a network providing a means to manage, multiplex and access various forms of digital traffic using a synchronous transmission format on fibre optics. The format is the North America version of “SDH” and also uses the Synchronous Transport Module (STM). However, it uses the Synchronous Transport Signal (STS) as the basic transport module with a first level rate of 51.81 Mbit/s. The SONET standards are being integrated into those of “SDH”.

170. “Systems tracks” (6) means processed, correlated (fusion of radar target data to flight plan position) and updated aircraft flight position report available to the Air Traffic Control centre controllers.

171. “Systolic array computer” (4) means a computer where the flow and modification of the data is dynamically controllable at the logic gate level by the user.

172. “Technical assistance” (GTN NTN) may take forms such as instructions, skills, training, working knowledge and consulting services and may involve the transfer of “technical data”.

173. “Technical data” (GTN NTN) may take forms such as blueprints, plans, diagrams, models, formulae, tables, engineering designs and specifications, manuals and instructions written or recorded on other media or devices such as disk, tape, read-only memories.

174. “Technology” (GTN NTN All) means specific information necessary for the “development”, “production” or “use” of goods. This information takes the form of “technical data” or “technical assistance”.

175. “Terminal interface equipment” (4) means equipment at which information enters or leaves the telecommunication system, e.g., telephone, data device, computer, facsimile device.

176. “Tilting spindle” (2) means a tool-holding spindle which alters, during the machining process, the angular position of its centre line with respect to any other axis.

177. “Time constant” (6) is the time taken from the application of a light stimulus for the current increment to reach a value of $1-1/e$ times the final value (i.e., 63% of the final value).

178. “Toxins” (1 2) means toxins in the form of deliberately isolated preparations or mixtures, no matter how produced, other than toxins present as contaminants of other materials such as pathological specimens, crops, foodstuffs or seed stocks of “microorganisms”.

178. “Total digital transfer rate” (5) means the number of bits, including line coding, overhead and so forth per unit time passing between corresponding equipment in a digital transmission system.

N.B.: See also “digital transfer rate”.

179. “Transfer laser” (6) means a “laser” in which the lasing species is excited through the transfer of energy by collision of a non-lasing atom or molecule with a lasing atom or molecule species.

180. “Tunable” (6) means the ability of a “laser” to produce a continuous output at all wavelengths over a range of several “laser” transitions. A line selectable “laser” produces discrete wavelengths within one “laser” transition and is not considered “tunable”.

181. “Uranium enriched in the isotopes 235 or 233” (0) means uranium containing the isotopes 235 or 233, or both, in an amount such that the abundance ratio of the sum of these isotopes to the isotope 238 is more than the ratio of the isotope 235 to the isotope 238 occurring in nature (isotopic ratio 0.72 per cent);

182. “Use” (GTN NTN All) means Operation, installation (including on-site installation), maintenance (checking), repair, overhaul and refurbishing.

183. “User-accessible programmability” (5 6) means the facility allowing a user to insert, modify or replace “programmes” by means other than:

- (a) A physical change in wiring or interconnections; or
- (b) The setting of function controls including entry of parameters.

184. “Vacuum Atomisation” (1) means a process to reduce a molten stream of metal to droplets of a diameter of 500 micrometre or less by the rapid evolution of a dissolved gas upon exposure to a vacuum.

185. “Variable geometry airfoils” (7) means the use of trailing edge flaps or tabs, or leading edge slats or pivoted nose droop, the position of which can be controlled in flight.